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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention]

[0001]

This invention relates to the thermosensitive lithography version precursor which needs aqueous alkalinity processing.

[Background of the Invention]

[0002]

Lithography includes typically the so-called use of a printing master like the printing version carried in tossing of a rotation printing machine. The master holds the lithography image on the front face, ink is applied to this image, and a print is obtained by subsequently imprinting ink on the acceptance ingredient which is paper typically from a master. In the case of the usual lithography, ink and aqueous solution (aqueous fountain solution) (it wets and called liquid (dampening liquid)) are supplied to the lithography image which consists of an oleophilic (or hydrophobicity, i.e., ink-receptiveness, water-resilience) field and a hydrophilic (or non-dense oiliness, i.e., water-receptiveness, ink-resilience) field. In the so-called "dry OGURA fee" printing, a lithography image consists of ink-receptiveness and an ink-imprint resistance (ink-abhesive) (ink-resilience) field, and only ink is supplied to a master between dry OGURA fee printings.

[0003]

Generally a printing master is obtained by the so-called computer-TSUU-film method (computer-to-film method), by the approach, type typeface selection, a scan, color separation, screening, trapping, a layout, and various Puri-press phases like attachment are performed in digital one, and each colour selection is imprinted by the graphic-arts film using an image setter. A film can be used as a mask for exposure of the image formation ingredient called a version precursor after processing, and the printing version which can be used as a master is obtained after processing of a version.

[0004]

The typical photosensitive printing version precursor for the computer-TSUU-film method contains the image-recording layer containing a hydrophilic base material and UV-susceptibility constituent. Typically, in UV contact frame, when the negative-operation nature version is exposed as image-with a film mask, the exposed image field serves as insolubility into an aqueous alkalinity developer, and there is a non-exposed region to that of fusibility. Subsequently, a version is processed using a developer and the diazonium salt or diazo resin in a non-exposed region is removed. Therefore, an exposed region divides the image field (printing field) of a printing master, and such a printing version precursor follows and is called "negative-operation nature." The positive-operation nature ingredient with which an exposed region divides a printing field, for example, the version which has the novolak / naphthoquinone-diazido coating dissolved into a developer only in the exposed field, is known.

[0005]

Besides the above-mentioned photosensitive ingredient, the thermosensitive printing version precursor has also spread very much. the so-called direct lithographic plate (computer-to-plate) with which such a

thermal ingredient gives the advantage of daylight-stability, and a version precursor is exposed, without using a direct, i.e., film, mask -- it is used especially by law. Usually, an ingredient is exposed as image-by heat or infrared laser light, and the heat to generate makes the insolubilization by bridge formation of a chemical (physical -) process, for example, ablation, a polymerization, and a polymer, or the particle coagulation of thermoplastic polymeric latex, and solubilization by destruction of an intermolecular interaction start.

[0006]

Coating of the typical thermosensitive lithography version precursor which needs alkaline processing contains the infrared light absorptivity compound which converts an alkali-fusibility binder and infrared light into heat. In the case of organic dye many, the conversion compound from light to heat is cyanine dye typically, it works as a dissolution inhibitor on a binder, namely, it makes the resistance of coating which faces to an alkaline developer increase, and, thereby, reduces the sensibility of coating. The output or the longer exposure time of a high light is needed between exposure as image-as a result. The patent reference 1 and the patent reference 2 are indicating the example of the color of such control nature.

[0007]

The patent reference 3 is indicating that the infrared cyanine dye which has betaine structure does not reduce the solubility of coating in the inside of a developer. However, it does not dissolve easily into an alkaline developer, but these colors have the inclination made to dye it coloring matter in the **-image field of the printing version.

[Patent reference 1] International public presentation/[97th] No. 39894 pamphlet

[Patent reference 2] The Europe patent application public presentation No. 823327 specification

[Patent reference 3] The Europe patent application public presentation No. 978376 specification

[Description of the Invention]

[0008]

The side face of this invention is offering the thermal lithography version precursor in which it has high sensibility to infrared light, and color dyeing's is not shown in a **-image field after exposure and processing. This purpose is realized by the ingredient of claim 1. A desirable mode is defined in a dependent claim.

[0009]

The cyanine dye defined by claim 1 comes to contain the methine chain and 3 and 4, or five solubilization radicals over which the bridge was constructed. Although the color which has less than three solubilization radicals does not give the advantage which became together [high sensibility and low dyeing], the color which has more solubilization radicals than five pieces has the inclination to precipitate by crystallization, between desiccation phases from the layer by which coating was carried out from the coating solution.

[0010]

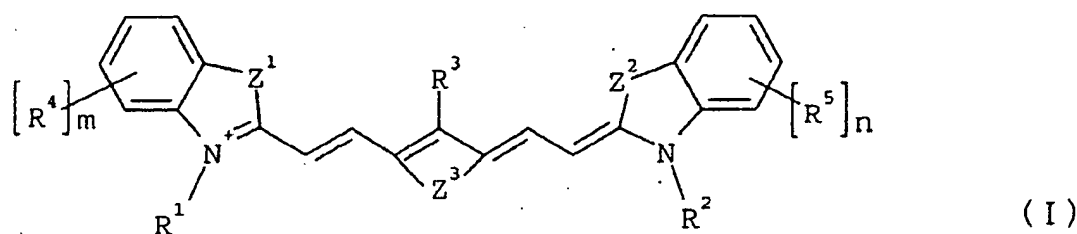
The thermosensitive lithography version precursor of this invention contains coating containing the oleophilic layer prepared a hydrophilic base material and on it. Coating argues [become / impossible / including the layer of more additions than one sort or it other than an oleophilic layer] about the example below again.

[0011]

Coating is the degree type I in either an oleophilic layer and/or the layer of this addition. :

[0012]

[Formula 1]



[0013]

Inside of [type,

- m and n show the integer of 0-4 independently, respectively.;
- Z¹ and Z² show 1 or two **-metallicity atoms required in order to complete independently 5- or 6-member heterocycle type ring, respectively which can be permuted.;
- Z³ shows 2 or three **-metallicity atoms required in order to complete 5- or 6-member heterocycle type or a ring type ring which can be permuted.;
- every -- the alkyl by which R¹, and R², R⁴ and R⁵ can be permuted independently by the case -- The alkenyl, aryl, an aralkyl radical or -G¹, -L¹-G¹, -CN, A halogen, -NO₂, -ORa, -CO-Ra, -CO-O-Ra, -O-CO-Rd, -CO-NRdRe, -NRdRe, -NRd-CO-Re, -NRd-CO-O-Ra, -NRd-CO-NReRf, -SRd, - Five sets become together. or [that the radical chosen from SO-Ra, -SO₂-Ra, -SO₂-O-Ra, and -SO₂-NRaRb is shown] --, or two adjoining R⁴ and R -- 5- or six membered-rings which can be permuted by the case were formed, and it is condensed to the ring formed of Z¹ or Z².;
- R³ shows hydrogen or a halogen atom, -L²-G², an alkyl group, an alkenyl radical, an aralkyl radical, an aryl group, a thio alkyl group, or a thio aryl group, and each of this radical can be permuted by the case.;
- L¹ and L² are divalent connection radicals, for example, arylene, or alkylenes.;
- Ra, Rb, and Rc are the alkyl which can be permuted by the case, the alkenyl, aryl, or an aralkyl radical.;
- Rd, Re, and Rf are] which is the alkyl which can be permuted by hydrogen or the case, the alkenyl, aryl, or an aralkyl radical.

It is alike and the infrared light absorptivity compound which follows is contained.

[0014]

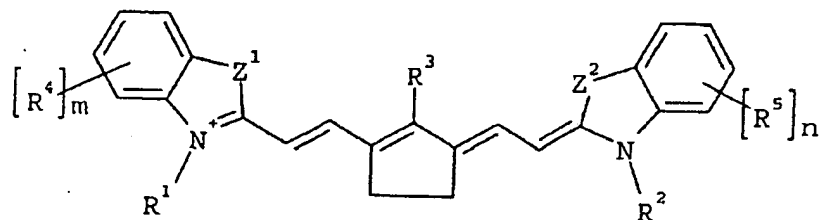
In the above-mentioned formula, it is a solubilization radical, i.e., anionic, or in at least 9 and the alkaline water solution which has pH of at least 12 preferably, G¹ and G² become anionic, and they are a ** machine. The total number of the solubilization radicals G¹ and G² is equal to 3, 4, or 5. The example for which such a solubilization radical was suitable -COOH, -OH, -PO₃H₂, -O-PO₃H₂, -SO₃H, -O-SO₃H, -SO₂-NH₂, -SO₂-NH-R, -SO₂-NH-CO-R, or the salt of one of these radicals, For example, it is alkali, an alkaline earth metal salt or Monod, G, or a trialkylammonium salt, and R is the alkyl which can be permuted by the case, the alkenyl, aryl, or an aralkyl radical here. The most desirable modes are -COOH, -SO₃H, and -OH. Typically, the concentration of IR absorptivity compound under coating is 0.5 - 7.5 % of the weight more preferably 0.25 to 10.0% of the weight to all the non-volatile components of coating.

[0015]

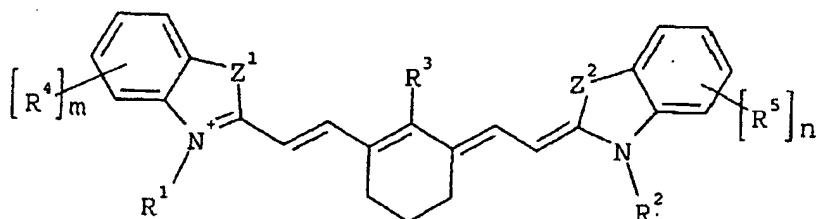
The subclass for which the above-mentioned color was suitable is shown by the degree type. :

[0016]

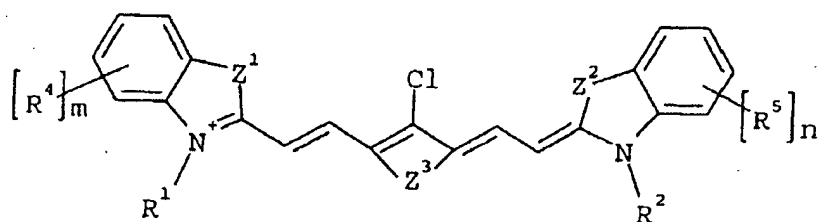
[Formula 2]



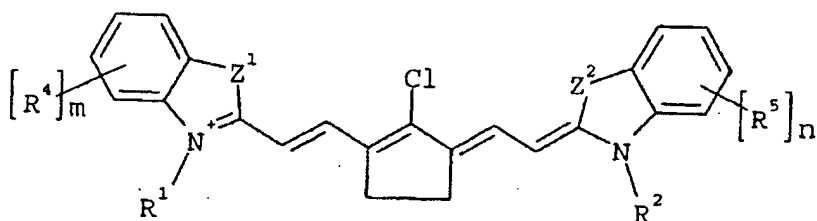
(II)



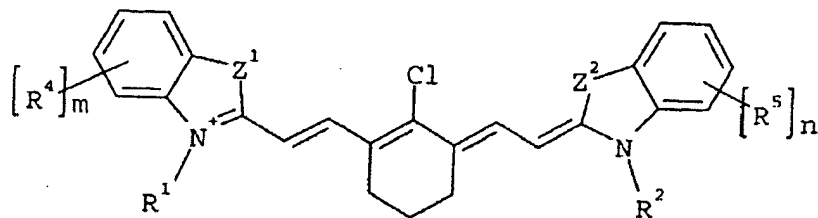
(III)



(IV)



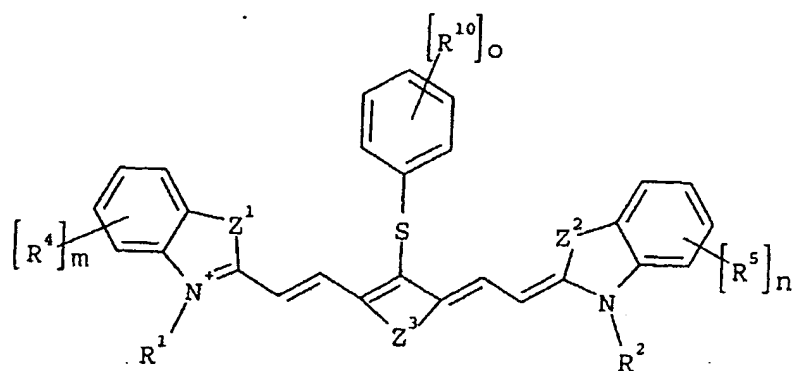
(V)



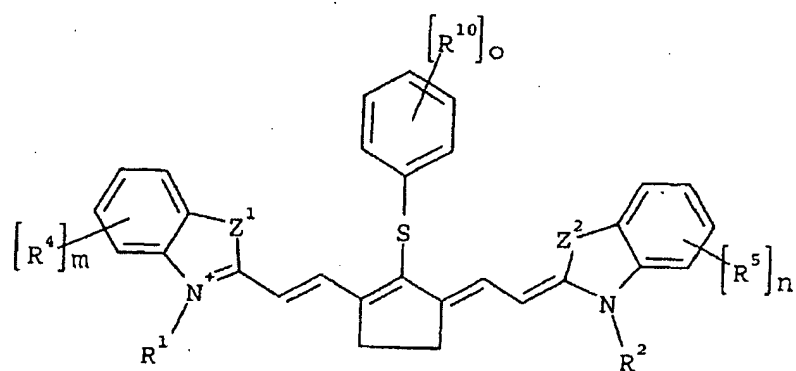
(VI)

[0017]

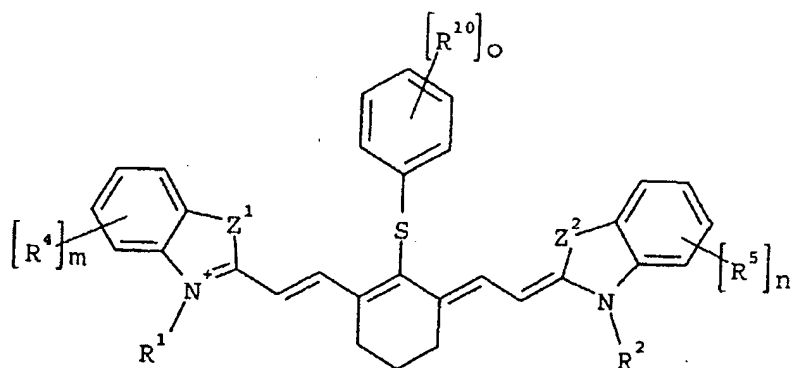
[Formula 3]



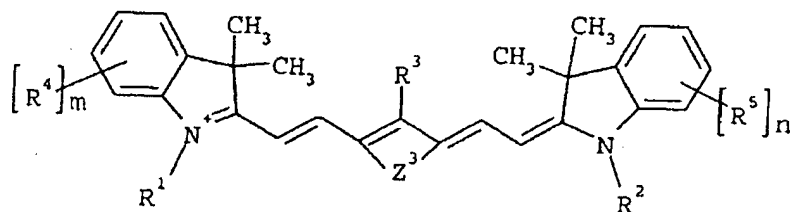
(VII)



(VIII)

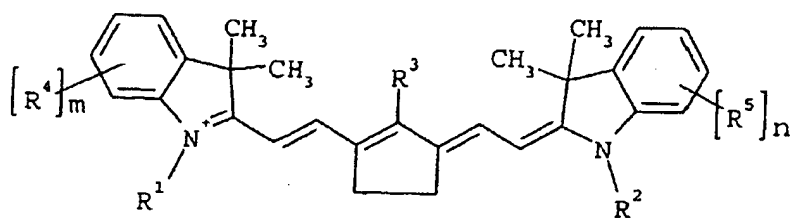


(IX)

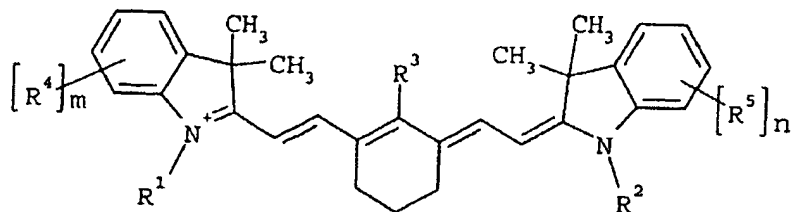


(X)

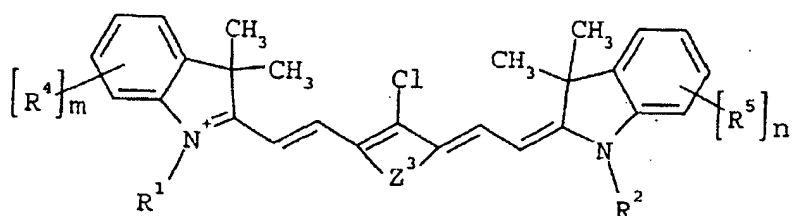
[0018]
[Formula 4]



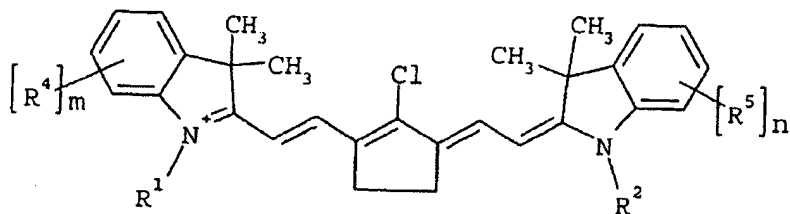
(XI)



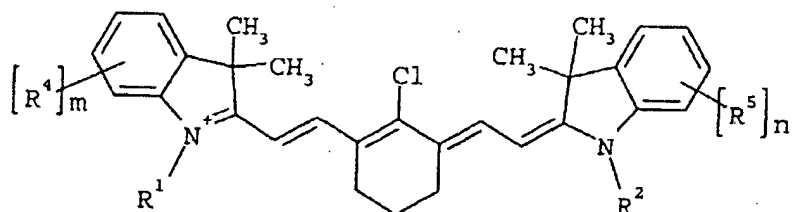
(XII)



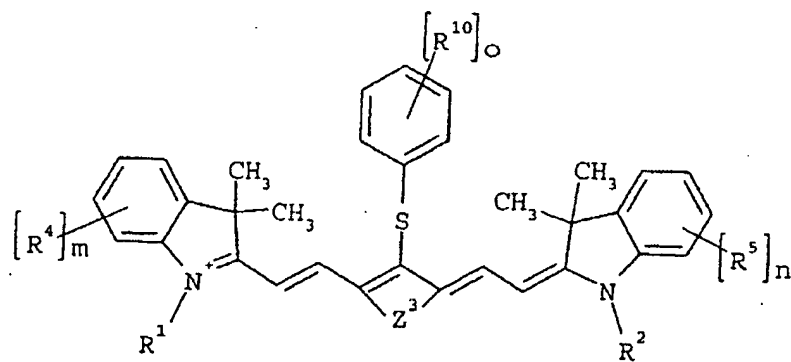
(XIII)



(XIV)



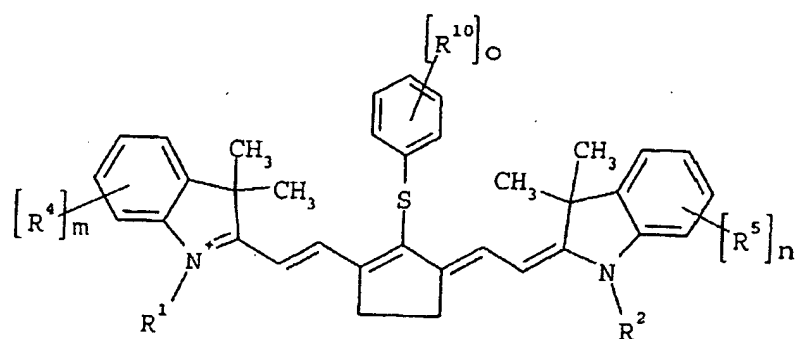
(XV)



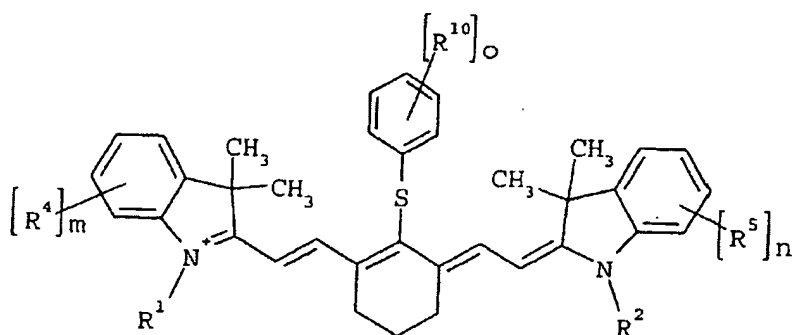
(XVI)

[0019]

[Formula 5]



(XVII)



(XVIII)

[0020]

In above-mentioned formula II-XVIII, m, n, R1, R2, R3, R4, R5, Z1, Z2, and Z3 have the same semantics also in the above-mentioned formula I. An integer o has the value of 0-5. R10 shows the radical defined about R4 and R5.

[0021]

The desirable subclass of an addition of the color of this invention, *claim 2*

- or [that R3 comes to contain this at least one solubilization radical] --; -- or

- or [that R1, R2, R3, R4, and R5 come to contain this one solubilization radical, respectively] --; -- or

- Or [that one of them is contained in each of R1, R2, and R3 for a color coming / three solubilization radicals]; *4*

- or [of R3, R4, and R5 / that one of them is alike, respectively and a color is contained coming / three solubilization radicals] --; -- or *5*

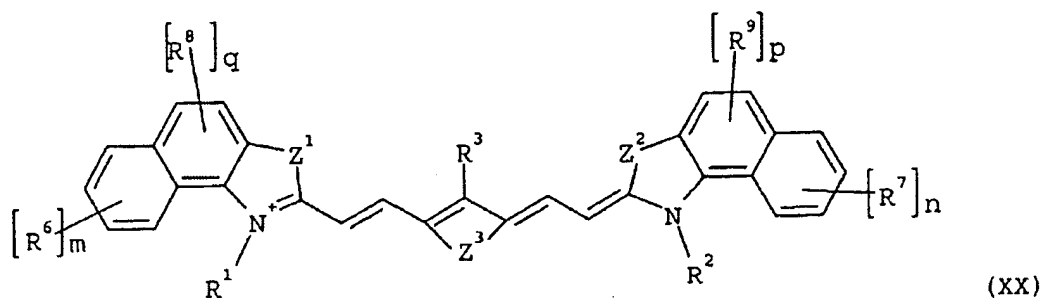
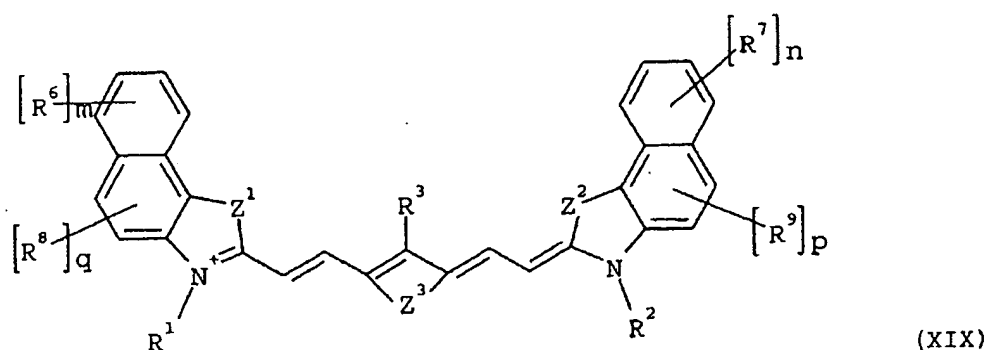
- one voice of above-mentioned formula I-XVIII of R1, R2, R4, and R5 in which one of them resembles, respectively and a color is contained coming [four solubilization radicals] -- it is shown more like. *6*

[0022]

7 the subclass for which others were suitable -- adjoining two R4 and/or R -- five sets become together, a phenyl group is formed, it can be permuted, and it is shown by the formula condensed to the ring formed of Z1 and Z2, respectively. Therefore, all of above-mentioned formula I-XVIII in which such a condensation phenyl group exists give the color for which it was suitable for the precursor of this invention. Formulas XIX and XX show two desirable modes of such a color. :

[0023]

[Formula 6]



[0024]

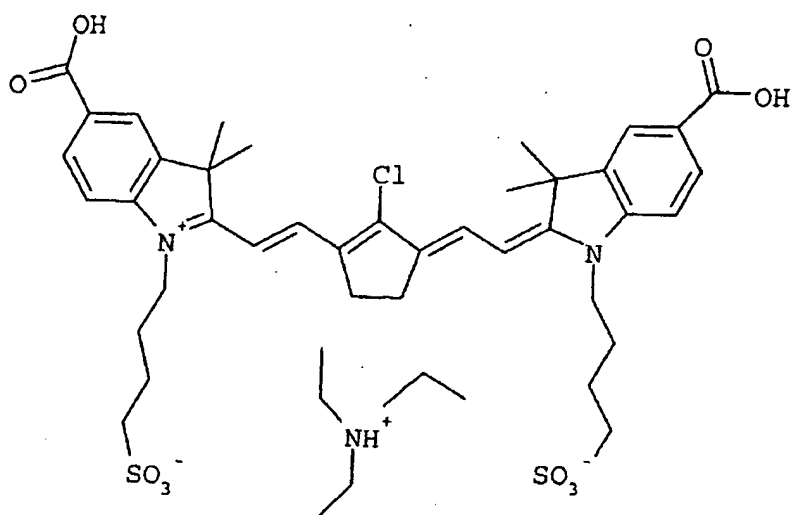
Among a formula, m, n, R1, R2, R3, Z1, Z2, and Z3 have the same semantics also in the above-mentioned formula I; p and q are 0, 1, or 2 independently, and R6-R9 show the radical defined independently about above R1 and R2, respectively. Two above-mentioned arrangement (configurations) of a condensation phenyl group is the derivatives of the above-mentioned formula I. A similar derivative can be built also from either of formula II-XVIII, and such a subclass is also a part of this invention.

[0025]

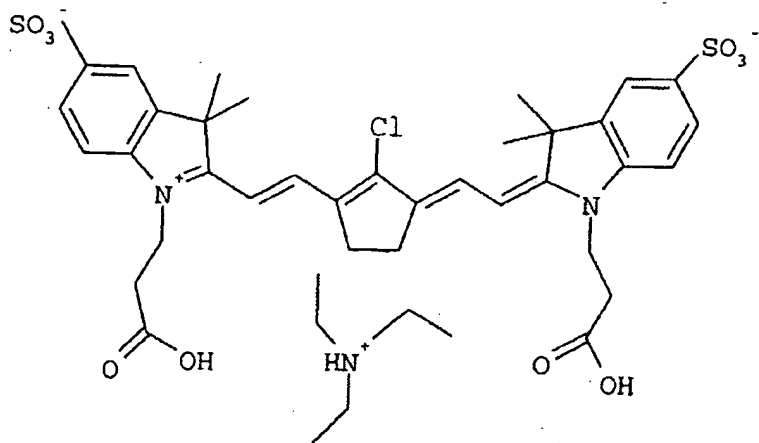
The following colors are contained in the specific example of the above-mentioned formula. :

[0026]

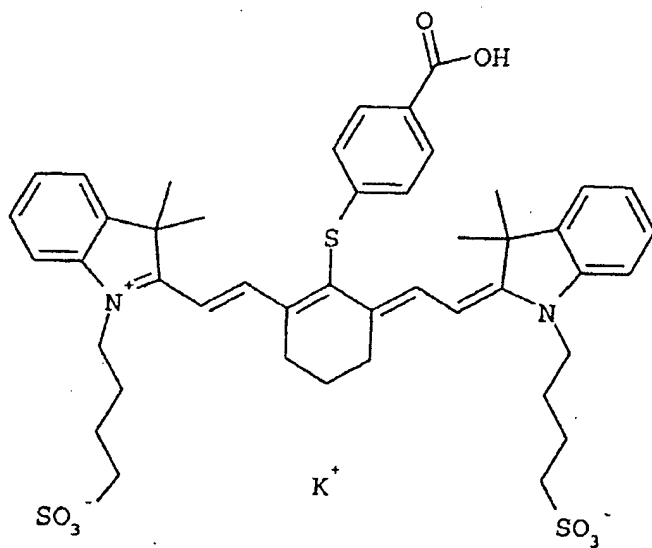
[Formula 7]



(IR-1)



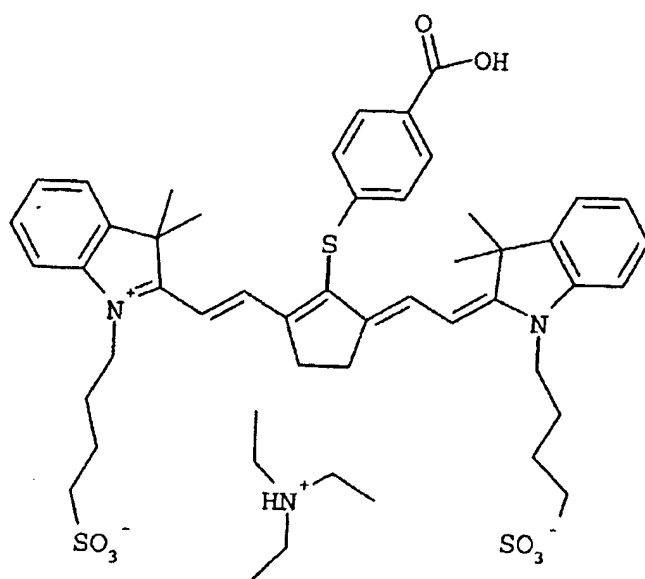
(IR-2)



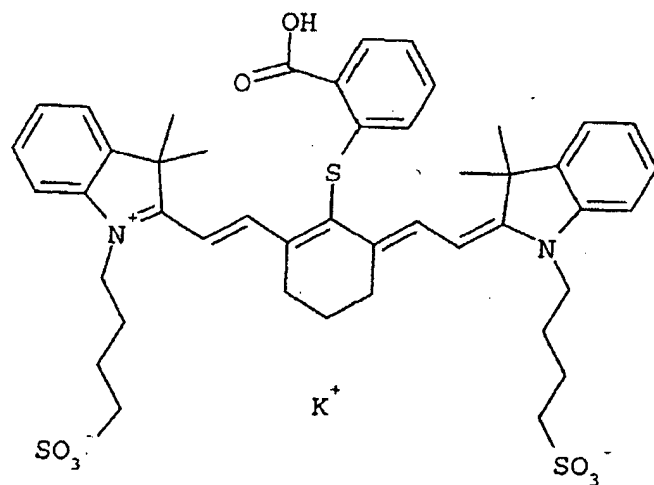
(IR-3)

[0027]

[Formula 8]



(IR-4)



(IR-5)

[0028]

Formation of the lithography image by the version precursor of this invention is the result of the heat-induction dissolution sexual differentiation of coating between the processings in a developer. It is characterized by the dissolution in a developer quicker, a characterization eclipse, i.e., a *-image field, than an image-field of the dissolution sexual differentiation between the image (printing, oleophilic) of a lithography image, and a *-image (*-printing, hydrophilic property) field by not thermodynamic effectiveness but kinetics-effectiveness. In the case of the most desirable mode, the *-image field of coating is completely dissolved in a developer, before an image field is attacked, and an image field is characterized by the clear edge and high ink-receptiveness. Completion of the dissolution of a *-image field and the time difference between initiation of the dissolution of an image field are preferably longer than 10 seconds, more preferably longer than 20 seconds, are most preferably longer than 60 seconds,

and, thereby, give large development latitude. A precursor can be positive - or negative-operation nature, and its mode of positive-operation nature is desirable.

[Best Mode of Carrying Out the Invention]

[0029]

The base material of the lithography version precursor has a hydrophilic front face, or a hydrophilic layer is prepared. A base material can be a sheet-Mr. ingredient, for example, a version, or it can be the element of the shape of a cylinder like the sleeve which it can let slide around the printing drum of a printing machine. It is a desirable metal [like aluminum or stainless steel] base material whose base material is. A base material can also be the laminated material containing aluminium foil and a plastics layer, for example, polyester film.

[0030]

Especially the desirable Taira version base material is an aluminum base material which was ground electrochemically and anodized. Polish and anodic oxidation of aluminum are common knowledge in the technical field concerned. The anodized aluminum base material can be processed and the hydrophilic property of the front face can be raised. For example, it can silicate-ize by processing the front face at the temperature which had the aluminum base material raised, for example, 95 degrees C, using a sodium-silicate solution. Or phosphate processing can be performed and the phosphate solution can contain the inorganic fluoride further again including it processing an aluminum-oxide front face with a phosphate solution. Furthermore, an aluminum-oxide front face can be rinsed with a citric acid or a citrate solution. This processing can be performed at a room temperature, or it can carry out at the temperature of about 30-50 degrees C raised slightly. Still more interesting processing includes rinsing an aluminum-oxide front face with a bicarbonate solution. Furthermore, an aluminum oxide front face can be processed using the acetal of the polyvinyl alcohol generated by the reaction with the sulfate of the phosphoric ester of polyvinyl phosphonic acid, polyvinyl methylphosphonic acid, and polyvinyl alcohol, a polyvinyl sulfonic acid, polyvinyl benzenesulfonic acid, and polyvinyl alcohol, and a sulfonation aliphatic series aldehyde. It is still clearer that it can be independent, or more than one or it of such after treatment can be combined, and it can be performed. the more detailed publication of these processings -- the [British patent application public presentation] -- 1 084 No. 070 specification -- A German country patent application public presentation 4 423 No. 140 specification, a German country patent application public presentation 4 417 No. 907 specification, the [Europe patent application public presentation] -- the [a 659 No. 909 specification and / Europe patent application public presentation] -- a 537 No. 633 specification -- the [Europe patent application public presentation] -- the [4 No. 001466 specification and / Europe patent application public presentation] -- the [a 292 No. 801 specification and / Europe patent application public presentation] -- the [291 No. 760 specification and United States patent] -- it is shown in 4 458 No. 005 specification.

[0031]

If other modes are followed, a base material can also be a flexibility base material with which the hydrophilic layer called a "base layer" below was prepared. Flexibility base materials are paper, plastic film, thin aluminum, or those laminated material. The desirable examples of plastic film are a polyethylene terephthalate film, a polyethylenenaphthalate film, an acetic-acid cellulose film, a polystyrene film, a polycarbonate film, etc. A plastic film base material can be opaque or transparent.

[0032]

A base layer is a hydrophilic layer which is obtained from the hydrophilic binder over which the bridge was constructed using a desirable hardening agent like formaldehyde, a glyoxal, polyisocyanate, or the hydrolyzed tetrapod-alkyl alt.silicate and over which the bridge was constructed. Especially the latter is desirable. The thickness of a hydrophilic base layer can change within the limits of 0.2-25 micrometers, and is 1-10 micrometers preferably. the hydrophilic binder for using in a base layer -- for example, hydrophilic (**) -- they are the homopolymer of a polymer, for example, vinyl alcohol, acrylamide, methylol acrylamide, methylol methacrylamide, an acrylate acid (acrylate acid), a methacrylate acid (methacrylate acid), hydroxyethyl acrylate, and hydroxyethyl methacrylate and a copolymer, or a maleic anhydride / vinyl methyl ether copolymer. Whenever [hydrophilic / of the (j) polymer or (j) polymer

mixture used] is the same as whenever [hydrophilic / of the polyvinyl acetate preferably hydrolyzed to extent of 80 percent by weights] at least 60 percent by weights preferably, or higher than it. even if there are few amounts of a hardening agent, especially tetra-alkyl alt.silicate per weight section of a hydrophilic binder preferably -- the 0.2 weight section -- more -- desirable -- 0.5 - 5 weight section -- it is 1 weight section - 3 weight section most preferably.

[0033]

A hydrophilic base layer can also contain the matter which raises the mechanical strength and porosity of a layer. A colloidal silica can be used for this purpose. The colloidal silica used can also be in the gestalt of an available water dispersion commercially [any of the colloidal silica which has the average grain size of a maximum of 40nm, for example, 20nm,]. the inactive, still bigger particle of a dimension than a colloidal silica, for example, J.Colloid and Interface Sci., and Vol. -- the particle which has the average diameter of at least 100nm which is the particle of the silica, alumina particle or titanium dioxide prepared according to Stoeber, or other heavy-metal oxides can be added as indicated by 26, 1968, and pages 62 to 69. microscopic [on the front face of a hydrophilic base layer] by installation of these particles -- the uniform coarse texture which consists of a hill and a trough is given, and it works as a preservation location for the water in a background region.

[0034]

the specific example of the hydrophilic base layer for which it was suitable in order to use according to this invention -- the [Europe patent application public presentation] -- the [a 601 No. 240 specification and / British patent] -- the [1 419 No. 512 specification and / French country patent invention] -- the [2 300 No. 354 specification and United States patent] -- the [3 971 No. 660 specification and United States patent] -- it is indicated by 4 284 No. 705 specification.

[0035]

An oleophilic layer contains the polymer of fusibility in an aquosity alkalinity developer. Which organic polymer nature binder can also be used in this invention. In order to guarantee that a layer is fusibility in an aquosity alkalinity developer, or an organic polymer nature binder is bloating tendency at least preferably, it is the binder which has the acidic group which has less than 13 electric dissociation exponent. Advantageously, a binder is a polymer or a polycondensation product, for example, polyester, a polyamide, polyurethane, or poly urea. For example, especially the polycondensation product and polymer that are obtained by making a phenol, resorcinol, cresol, a xylenol, or a trimethyl phenol react with an aldehyde especially formaldehyde, or a ketone and that have the phenol nature hydroxyl of isolation are also suitable. The condensation product of sulfamoyl - or a carbamoyl-permutation aromatic compound, an aldehyde, or a ketone is also suitable. The polymer of bis-methylol-permutation urea, vinyl ether, vinyl alcohol, vinyl acetate, or a vinyl amide, the polymer of phenyl acrylate, and the copolymer of hydroxyl phenyl maleimide are suitable similarly. Furthermore, the polymer which has the unit of a vinyl aromatic series unit, N-aryl (meta) acrylamide, or aryl (meta) acrylate can be mentioned, and each of these units can also have many carboxyl groups, phenol nature hydroxyl, the sulfamoyl group, or the carbamoyl group from one piece or it. In a specific example, they are 2-hydroxyphenyl (meta) acrylate, N-(4-hydroxyphenyl) (meta) acrylamide, and N. -(4-sulfamoyl phenyl)- (meta) Acrylamide, N -(4-hydroxy - 3, 5-dimethylbenzyl)- (meta) The polymer which has the unit of acrylamide, 4-hydroxystyrene, or hydroxyphenyl maleimide is contained. A polymer can contain the unit of other monomers which do not have the acid unit further. A vinyl aromatic series unit, methyl (meta) acrylate, phenyl (meta) acrylate, benzyl (meta) acrylate, methacrylamide, or acrylonitrile is contained in such a unit.

[0036]

The binder of which amount can also be used. The amount of a binder is 80 - 99 % of the weight especially preferably 70 to 99.4% of the weight preferably 40 to 99.8% of the weight based on the sum total weight of the non-volatile component of coating, respectively advantageously. In the case of a desirable mode, a polycondensation product is phenol resin, for example, a novolak, a resol, or a polyvinyl phenol. A novolak is cresol / formaldehyde, or cresol / xylenol / formaldehyde novolak preferably, and the amount of a novolak is at least 80 % of the weight preferably at least 50% of the

weight based on the sum total weight of all binders, respectively advantageously.

[0037]

The soluble accommodation component of arbitration can ** - adjust the dissolution behavior of the oleophilic layer in a developer. An accelerator and a development restrainer can be used still more specifically. These components can be added to the unit of an oleophilic layer and/or coating, or two or more of other layers.

[0038]

An accelerator is a compound which acts as a dissolution accelerator, and that is because they can gather the dissolution rate of an oleophilic layer. In order to promote aqueous development nature (aqueous developability), a cyclic anhydride, phenols, or an organic acid can be used. Phthalic anhydride which is indicated by the U.S. Pat. No. 4,115,128 specification, a tetrahydrophthalic anhydride, a hexahydrophthalic anhydride, 3, a 6-en DOKISHI-4-tetrahydrophthalic anhydride, a tetrachlorophthalic anhydride, a maleic anhydride, a chloro maleic-acid anhydride, an alpha-phenyl maleic-acid anhydride, a succinic anhydride, and a pyromellitic acid anhydride are contained in the example of a cyclic anhydride. the example of phenols -- bisphenol A -- p - a nitrophenol -- p - ethoxy -- a phenol -- two -- four -- four -- ' - trihydroxy -- a benzophenone -- two -- three -- four - trihydroxy - a benzophenone -- four - hydroxy one -- a benzophenone -- four -- four -- ' -- four -- " - trihydroxy - a triphenylmethane color -- and -- four -- four -- ' -- three -- " -- four -- " - tetra--- hydroxy one - 3, 5, 3', and 5' -- - tetramethyl triphenyl-methane etc. be contained. A sulfonic acid which is indicated by for example, JP,60-88,942,B and the Taira No. 96,755 [two to] official report, a sulfinic acid, alkyl sulfuric acid, phosphonic acid, phosphate, and a carboxylic acid are contained in the example of an organic acid. P-toluenesulfonic acid, dodecylbenzenesulfonic acid, p-toluene sulfinic acid, ethyl sulfuric acid, phenylphosphonic acid, phenyl phosphinic acid, phenyl phosphate, diphenyl phosphate, a benzoic acid, isophthalic acid, an adipic acid, para toluylic acid, 3, 4-dimethoxy benzoic acid, 3 and 4, a 5-trimethoxy benzoic acid, 2 and 3, 4-trimethoxycinnamic acid, a phthalic acid, a terephthalic acid, the 4-cyclohexene -1, 2-dicarboxylic acid, an erucic acid, a lauric acid, an n undecane acid, and an ascorbic acid are contained in the specific example of these organic acids. The amount of the cyclic anhydride contained during coating, a phenol, or an organic acid is 0.05 - 20% of the weight of within the limits preferably.

[0039]

In the case of a desirable mode, coating can also contain more components between the developing agent resistance means called a development restrainer, i.e., processing, than one sort or it which can delay the dissolution of a non-exposed region. Dissolution depressor effect can decrease with heating preferably, therefore the dissolution of an exposed region cannot be overdue, and, thereby, the big dissolution differentiation between an exposed region and a non-exposed region can be acquired. Such a developing agent resistance means can be added to an oleophilic layer or other layers of an ingredient.

[0040]

the [for example, / Europe patent application public presentation] -- the [a 823 No. 327 specification and / international public presentation] -- the unit under coating according [the compound indicated by the No. 7/39894 pamphlet] for example, to hydrogen arch forming, or an interaction with two or more alkali-fusibility binders -- therefore, it acts as a dissolution inhibitor. This type of inhibitor contains more [typically] nuclei than a hydrogen arch-forming radical, for example, a nitrogen atom, an onium radical, carbonyl (-CO-), sulfinyl (-SO-) or a sulfonyl (-SO2-) radical and a big hydrophobic part, for example, one piece, or it.

[0041]

The inhibitor for which others were suitable raises developing agent resistance by the reason they delay osmosis of the aqueous alkalinity developer to the inside of an oleophilic layer. such a compound -- the [for example, / Europe patent application public presentation] -- it is indicated by the 950 No. 518 specification -- as -- the [own inside of an oleophilic layer or / for example, / Europe patent application public presentation] -- the [a 864 No. 420 specification and / Europe patent application public presentation] -- the [a 950 No. 517 specification and / international public presentation] -- the [a No. 99/21725 pamphlet and / international public presentation] -- it can exist in the development barrier

layer on an oleophilic layer as indicated by the No. 01/45958 pamphlet. the voice of positive operation nature -- case like -- a barrier layer -- desirable -- the inside of a developer -- insolubility -- or this contains the polymer nature ingredient, for example, acrylic (KO -) polymer, polystyrene, and styrene-acrylic copolymer, the polyester, the polyamide, the poly urea, the polyurethane, the nitrocellulose system derivative, the epoxy resin, and silicone of non-permeability. In this mode, the solubility of the barrier layer in a developer or the permeability of the barrier layer by the developer can be reduced by exposure to heat or infrared light.

[0042]

A polymer including a water-resilience polymer, for example, a siloxane, and/or a perfluoro-alkyl unit is contained in the desirable example of the inhibitor of the latter mold. In the case of a typical mode, a precursor contains 0.5-25mg/m², and the barrier layer preferably contained in 0.5 - 15 mg/m² and the amount for which 0.5 - 10 mg/m² was most preferably suitable for such a water-resilience polymer. Depending on oleophilic [of a compound / the hydrophobicity and/or oleophilic], or the smaller amount is also suitable. When a water-resilience polymer is also the ink-resilience, in the case of a polysiloxane, more amounts than 25mg/m² may produce the ink-receptiveness in which the **-exposed region was inferior. On the other hand, an amount smaller than 0.5 mg/m² may be led to dissatisfied development resistance. A polysiloxane can be a line, annular, complex crosslinked polymer, or a copolymer. One vocabulary called a polysiloxane compound contains many siloxane radical-Si(R, R')-O-, and R and R' contains among a formula any compound which is the alkyl or the aryl group which can be permuted by the case. Desirable siloxanes are a phenyl alkyl siloxane and a dialkyl siloxane. (j) the number of the siloxane radicals in a polymer -- at least 2 -- desirable -- at least 10 -- it is at least 20 more preferably. It can be less than 60 preferably less than 100. In another mode, a water-resilience polymer is the block copolymer or graft copolymer including Pori (alkylene oxide), a siloxane, and/or a perfluoro-alkyl unit of a polymer. The suitable copolymer contains about 15-25 siloxane units and 50-70 alkylene oxide radicals. the copolymer which contains a phenylmethyl siloxane and/or dimethylsiloxane and ethylene oxide, and/or propylene oxide in a desirable example -- for example, available Tego Glide 410, Tego Wet 265, Tego Protect 5001, or Silikophen P50/X is altogether contained commercially from Tego Chemie, Essen, and Germany. Such a copolymer acts as a surface active agent, and if coating of it is carried out, even if there will be an inclination to put oneself on the interface between coating and air on account of the 2 functional-group nature structure and it will be applied as a component of the coating solution of an oleophilic layer by that cause, it forms another maximum upper layer. Such a surface active agent acts on coincidence as a spreading agent which raises the quality of coating. Or a water-resilience polymer is applicable again into the 2nd solution by which coating is carried out on an oleophilic layer. In the case of the mode, as a water-resilience phase with very high concentration is obtained by the best of an ingredient, it is advantageous to use the solvent which cannot dissolve the component which exists in the 1st layer in the 2nd coating solution, and it obtains.

[0043]

In order to protect especially the front face of coating from a mechanical damage, a protective layer is also applicable with a case. Including at least one sort of water-soluble polymer nature binders, for example, polyvinyl alcohol, a polyvinyl pyrrolidone, the polyvinyl acetate hydrolyzed partially, gelatin, a carbohydrate, or hydroxyethyl cellulose generally, a protective layer is a known approach, for example, can be formed from a water solution or aqueous dispersion liquid, if they are required, it is little, i.e., based on the sum total weight of the coating solvent for a protective layer, less than 5% of the weight of the organic solvent can be contained. Protection layer thickness can also be the thickness which can creep appropriately, and can be 0.15-1.0 micrometers especially preferably 0.1-3.0 micrometers preferably a maximum of 5.0 micrometers advantageously.

[0044]

The oleophilic layer can contain an additional component further specifically in coating and a pan by the case. Desirable components are the binder of the addition for increasing the run length and chemoresistance nature of a version especially a sulfonamide, and a phthalimide radical content polymer. The example of such a polymer is indicated by the Europe patent application public

presentation No. 933682 specification, the Europe patent application public presentation No. 894622 specification, and the international public presentation/[99th] No. 63407 pamphlet. A coloring agent, for example, a color, or a pigment can also be added, and it gives a visible color to coating, and it stops during coating in a non-exposing part, and a visible image is formed after exposure and processing. the typical example of such a contrast color -- an amino-permutation tree or a diaryl methane color (Crystal Violet), for example, a crystal violet, Methyl Violet (Methyl Violet), Victoria pure blue (Victoria Pure Blue), and a flexo brow (Flexoblau) -- 630 and a BASONIRU brow (Basonylblau) -- they are 640, AURAMIN, and Malachite Green (malachite green). A surface active agent especially a perfluoro-surface active agent, a silicon dioxide or a titanium particle, a polymer particle, for example, a flattening, and a spacer are also the components of common knowledge of the Taira version coating which may be used in the version precursor of this invention.

[0045]

Which known approach can also be used for manufacture of the lithography version precursor. For example, it cannot react irreversibly with a component and the above-mentioned component can be dissolved into the solvent mixture made by suiting a presentation and desiccation conditions of the coating method whose intention it has preferably, layer thickness, and a layer. To the suitable solvent, ketones (butanone), for example, a methyl ethyl ketone, and chlorinated hydrocarbon, For example, a trichloroethylene or 1,1,1-trichloroethane, alcohols, For example, a methanol, ethanol or propanol, and ether, for example, a tetrahydrofuran, Glycol-monoalkyl ether, for example, ethylene glycol monoalkyl ether, For example, 2-methoxy-1-propanol or propylene glycol monoalkyl ether and ester, for example, butyl acetate, or propylene glycol monoalkyl ether acetate is contained. Mixture can also be used and it can contain a solvent still like an acetonitrile, dioxane, dimethylacetamide, dimethyl sulfoxide, or water for the special purpose.

[0046]

Which coating method can also be used for application of more coating solutions than one or that to the hydrophilic front face of a base material. Each class can be applied and ** -layer coating can be continuously applied coating / by drying by [a certain] being, crawling and coating coincidence with the coating solution of shoes at once. In a desiccation phase, a volatile solvent is removed from coating until coating will be in a self-standing next door and a set-to-touch condition. However, it is necessary to remove no solvents in a desiccation phase (and it is better not to carry out, even if possible). In fact, residual solvent content may be regarded as an additional presentation variable, and, thereby, can optimize a presentation. In hot blast, at least 70 degrees C of desiccation are typically performed appropriately on coating 80-150 degrees C and by ventilating at the temperature of 90-140 degrees C especially. The drying time can be 15 - 600 seconds typically.

[0047]

heat -- using -- direct, for example, a thermal head, -- or infrared light -- an ingredient can be preferably exposed as image-indirectly by near-infrared light. Infrared light is converted into heat with IR light absorption nature compound about which it argued above preferably. The thermosensitive lithography version precursor of this invention is not susceptibility preferably at the light, namely, the substantial effect of the dissolution rate on coating in a developer is not caused by exposure to the light. A safety light environment is most preferably unnecessary, and coating is not susceptibility in the perimeter daylight, i.e., the reinforcement corresponding to the usual working condition to visible (400-750nm) and ** UV light (300-400nm), and the exposure time so that an ingredient can be dealt with. It means that a substantial change of the dissolution rate of coating ["be / it / susceptibility"] in a developer is not caused to the daylight by exposure to the perimeter daylight. the photosensitive component which absorbs ** UV to which coating exists during the lighting of daylight or office, and the solubility of coating in an exposed region is changed by that cause in the mode of desirable daylight stability, and/or the light, for example, (quinone), diazido, a diazo (NIUMU) compound, and a photograph -- acid (photoacids), a photoinitiator, a sensitizer, etc. are not included.

[0048]

The printing version precursor of this invention can be exposed to infrared light with LEDs or laser. The

light used for exposure is the laser which emits the near-infrared light which has the wavelength in the field of about 750 - 1500nm of abbreviation, for example, semi-conductor laser diode, Nd:YAG, or Nd:YLF laser most preferably. It depends for a required laser output on the sensibility of an image-recording layer, the pixel residence time of the laser beam determined with a spot diameter (a modernistic plate-setter's typical value in 1 the maximum reinforcement's / e2: 10-25 micrometers), a scan speed, and the resolution (namely, the number of the pixels in which the address per [which is expressed with the dot or dpi per inch in many cases] unit of a slant range is possible (addressable); typical value:1000 - 4000dpi) of exposure equipment.

[0049]

Laser-exposure equipment of two molds: The interior (ITD) and an external drum (XTD) plate-setter are usually used. Typically, the ITD plate-setter for the thermal version is characterized by the very high scan speed of a maximum of 500m/second, and may need a several W laser output. The XTD plate-setter for the thermal version which has the typical laser output of 200mW of abbreviation - and about 1 W works in a second in a lower scan speed /, for example, 0.1-10m.

[0050]

Being able to use a known plate-setter as OFF-press exposure equipment, it gives the profits of reduction of press down-time amount (press down-time). XTD plate-setter arrangement can also be used for ON-press exposure, and the profits of direct aim doubling in a multicolor printing machine are given. The further technical details of ON-press exposure equipment are indicated by for example, the U.S. Pat. No. 5,174,205 specification and the U.S. Pat. No. 5,163,368 specification.

[0051]

In a development phase, the *-image field of coating is removed by being immersed into the usual aqueous alkalinity developer, and can combine it with mechanical ***** for example, with a rotation brush. The water-soluble protective layer which exists between development is also removed. The developer based on the silicate which has the ratio of the silicon-dioxide pair alkali-metal oxide of at least 1 is desirable in order to guarantee that the alumina layer of a substrate is not harmed (when it exists). Na₂O, K₂O, and those mixture are contained in a desirable alkali-metal oxide. A developer can contain a buffer substance, a complex-ized agent, a defoaming agent, a little organic solvent, corrosion inhibitor, a color, a well-known surfactant, and/or a well-known hydrotrope agent (hydrotropic agents) in still more nearly another component, for example, the technical field concerned, by the case other than an alkali-metal silicate. Development is 20-40 degrees C in temperature preferably, and is performed in the usual automation processor in the technical field concerned. The alkali-metal silicate solution which has 0.6-2.0 mols [/l.] alkali-metal content for playback can be used appropriately. These solutions can have the same silica / alkali-metal oxide ratio as a developer (however, generally it is lower), and can contain the further additive by the case similarly. The amount of the required ingredient reproduced must be fitted by the throughput of the developer used and the version on the 1st, the area of an image, etc., and, generally is 1-50ml per square meter of a record ingredient. the [for example, / Europe patent application public presentation] -- addition can be adjusted by measurement of conductivity as indicated by 0 556 No. 690 specification.

[0052]

If, after using the correction agent (correcting agent) or antiseptics for which known was [in / subsequently / the technical field concerned] suitable in the version precursor according to this invention - It can process. The increase of the resistance of the completion printing version, and in order to follow and to extend printing operation, short-time heating can be carried out at the temperature which had the layer raised ("baking"). The resistance of the printing version to a washout agent, a correction agent, and UV-hardenability printing ink also increases as a result. such after [thermal]-processing -- inside -- the [German country patent application public presentation] -- the [14 47 No. 963 specification and / British patent application public presentation] -- it is indicated by 1 154 No. 749 specification.

[0053]

A rinse phase, a desiccation phase, and/or a rubberizing phase can also include the processing of a

version precursor other than after [the above]-processing.

[0054]

The printing version obtained in this way can be used for the so-called usual wet offset printing, and ink and aqueous solution are supplied to a version in the printing. The print processes for which others were suitable wet, and use the so-called **-fluid ink without liquid. the **-fluid ink which was suitable in order to use by the approach of this invention -- U.S. Pat. No. 4,045,232 specification; -- it is indicated by the U.S. Pat. No. 4,981,517 specification and the U.S. Pat. No. 6,140,392 specification. In the case of the most desirable mode, **-fluid ink contains the ink phase and polyol phase which are also called hydrophobicity or an oleophilic phase as indicated by the international public presentation/[00th] No. 32705 pamphlet.

[Example]

[0055]

Solubility of IR-color

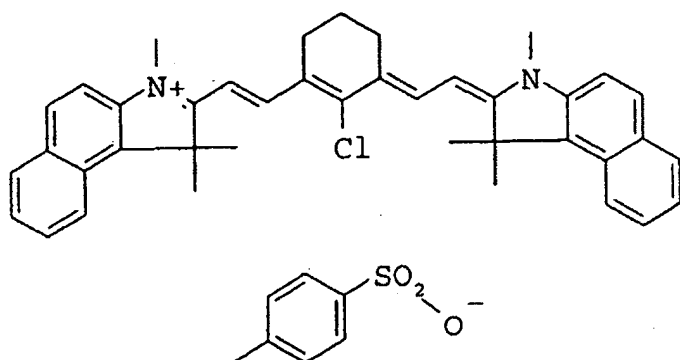
The solubility of IR-color IR-1--5 and the comparison color C1 (commercially available from FEW Chemicals GmbH) was determined as follows. :

- The absorbancy index of a color was measured using the HP8453 UV/VIS/NIR spectrophotometer in the methanol.;

-; which prepared the supersaturated solution of 2-methoxy-1-propanol (MOP) and the color in water / NaOH (pH=9) -- the concentration of the color dissolved by the dissolution using a methanol was determined using the absorbancy index determined after filtration and as a front.

[0056]

[Formula 9]



(C 1)

[0057]

[Table 1]

表1:IR-染料の溶解度

染料	MOP中の溶解度	pH=9における H ₂ O/NaOH中 の溶解度
IR-染料 1	3.8 g/l	40.1 g/l
IR-染料 2	0.42 g/l	>50 g/l
IR-染料 3	>100 g/l	>50 g/l
IR-染料 4	5.7 g/l	>50 g/l
IR-染料 5	91.3 g/l*	>50 g/l
比較	50.1 g/l	<2 mg/l **

* 染料の溶解のためにトリ-エチルアミンを加えた。

** pH=9では不溶性;pH=11.7までNaOHを加えた。

[0058]

Manufacture of a base material

The foil was immersed into the water solution with which thickness contains the sodium hydroxide of 5 g/l for the aluminium foil which is 0.30mm in 50 degrees C, and it degreased by rinsing by deionized water. Subsequently, the foil was electrochemically ground in the water solution which contains the hydrochloric acid of 4 g/l, the boric acid of 4 g/l, and the aluminum ion of 5 g/l using an alternating current in the temperature of 35 degrees C, and the current density of 1200 A/m², and the surface topology which has 0.5-micrometer average core-line granularity Ra was formed.

[0059]

After rinsing by deionized water, using the water solution which subsequently contains the sulfuric acid of 300 g/l, in 60 degrees C, aluminium foil was etched for 180 seconds, and it rinsed by deionized water for 30 seconds in 25 degrees C.

[0060]

In the water solution containing the sulfuric acid of 200 g/l, a foil Then, the temperature of 45 degrees C, In the electrical potential difference of about 10 V, and the current density of 150 A/m² For about 300 seconds, Present anodic oxidation and the anodic oxidation film of aluminum 2O₃ of 3.00 g/m² is formed. Subsequently, it was washed by deionized water and after treatment was carried out using the solution containing polyvinyl phosphonic acid, and the solution which continues and contains 3 aluminum chlorides, and using deionized water, at 20 degrees C, it rinsed for 120 seconds and dried. The trial of the control capacity of a color

The layer of the color specified in a novolak (Alnovol SPN452 from Clariant, 40.5-% of the weight solution in methoxy propanol) and Table 2 was coated on the above-mentioned base material. After drying for 1 minute at 130 degrees C, the sample contained the novolak of 0.9 g/m². The non-exposing sample of one sequence was immersed in 20 degrees C into time amount which is different about each sample, and Agfa EP26 developer. The sample was taken out from the developer after immersion time amount, and it rinsed with water immediately, and it dried and the dissolution of coating in a developer was measured by subsequently measuring the weight of the sample before and after development. Shortly after coating dissolves completely, the curve which weight loss is not measured even if it sets immersion time amount longer than it, namely, shows weight loss as a function of immersion time amount will arrive at a plateau from the moment of the perfect dissolution of a layer, and will call it

"dissolution time amount" on these specifications. When the dissolution time amount of the sample containing IR color is longer than the dissolution time amount of the sample which does not contain IR color, IR color is acting as an inhibitor clearly. When the dissolution time amount of the sample containing IR color is not longer than the value of a reference sample, IR color is ** -control nature and does not reduce the solubility of the oleophilic layer in a developer after all.

[0061]

[Table 2]

表2

実施例番号	染料 (mg/m ²)	溶解時間(秒)
1 (参照)	なし	30
2 (本発明)	IR-1 (35)	30
3 (本発明)	IR-2 (35)	20
4 (本発明)	IR-3 (35)	30
5 (本発明)	IR-4 (35)	20
6 (本発明)	IR-5 (35)	25
7 (比較)	C1 (35)	60

[0062]

Examples 2-6 were equal to the reference example 1 which contains the color according to this invention and does not contain a color, or showed the value of dissolution time amount shorter than it. The comparison example 7 showed dissolution time amount longer than the ingredient according to this invention.

Version precursor ingredient

The solution in the following table 3 was coated at 10.8m rate for /in the humid coating thickness of 22 micrometers on the above-mentioned base material using the drying temperature of 135 degrees C on the coating line. Subsequently, image formation of the ingredient was carried out on Creo Trendsetter 3244 (830nm) using various energy density setup (reinforcement in an image side) of within the limits from 90 mJ/cm² to 220 mJ/cm². Subsequently, in the Agfa Autolith PN85 processing machine operated the rate for 0.96m/, using Agfa DP300 developer, the version was processed at 25 degrees C, and, finally rubberizing of Agfa Ozasol RC795 was used and carried out. IR-sensibility of various presentations corresponds to a threshold energy consistency setup required to obtain 50% reduction of the extinction of coating, and extinction of coating is measured in the field exposed in the maximum wave length of a contrast color using the dot area of a screen 50% on the developed version (setting to 200 lpi).

[0063]

The result of Table 3 shows that sensibility with ** -control nature color IR-1--5 [higher than the control nature IR-color C1] is given.

[0064]

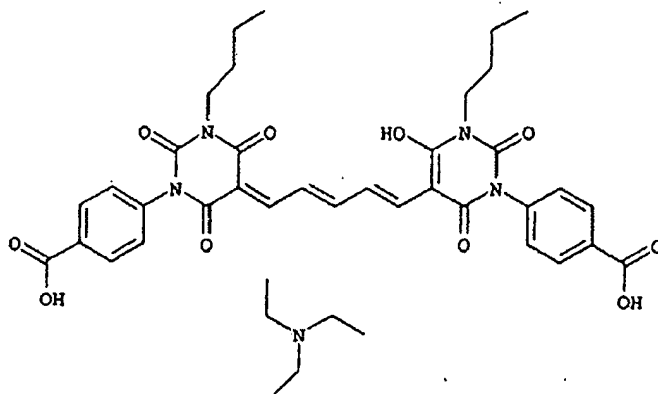
[Table 3]

表3

成分 (g)	実施例8 (本発明)	実施例9 (本発明)	実施例10 (本発明)	実施例11 (本発明)	実施例12 (本発明)	実施例13 (比較)
トラヒトロフラン	206	206	206	206	206	206
Alvonol SPN452*	131	131	131	131	131	131
オキシプロパノール	241	241	241	241	241	241
メチルエチルケトン	263	263	263	263	263	263
C1	-	-	-	-	-	1.77
IR-1	1.77	-	-	-	-	-
IR-2	-	1.77	-	-	-	-
IR-3	-	-	1.77	-	-	-
IR-4	-	-	-	1.77	-	-
IR-5	-	-	-	-	1.77	-
コントラスト染料 **	120	120	120	120	120	120
Tego Glide 410 ***	25.25	25.25	25.25	25.25	25.25	25.25
2,3,4-トリオキシ-ケイ皮酸	4.55	4.55	4.55	4.55	4.55	4.55
IR 感度 (mJ/cm ²)	115	115	115	115	115	190

*Alvonol SPN452は Dowanol PM (Clariantから商業的に入手可能) 中の40.5%溶液である。

** 以下の非-抑制性染料のオキシプロパノール中の 1% w/w 溶液:



*** Tego Chemie, Essen, Germany から商業的に入手可能な界面活性剤:
オキシプロパノール中の1重量%溶液。

[Translation done.]